

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference A30436 WO	FOR FURTHER ACTION	See item 4 below
International application No. PCT/GB2004/004685	International filing date (<i>day/month/year</i>) 08 November 2004 (08.11.2004)	Priority date (<i>day/month/year</i>) 12 November 2003 (12.11.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 15 May 2006 (15.05.2006)
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 06 MAY 2005

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To:

26/5

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/GB2004/004685

International filing date (day/month/year)
08.11.2004

Priority date (day/month/year)
12.11.2003

International Patent Classification (IPC) or both national classification and IPC
G06T5/00

Applicant

BRITISH TELECOMMUNICATIONS PUBLIC LIMITED COMPANY

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/004685

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/GB2004/004685

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, Inventive step or
Industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	1-6
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V.

Reference is made to the following documents:

D1 : MCKENNA S J ET AL: "Tracking Groups of People" COMPUTER VISION AND IMAGE UNDERSTANDING, ACADEMIC PRESS, SAN DIEGO, CA, US, vol. 80, no. 1, October 2000 (2000-10), pages 42-56, XP004439258 ISSN: 1077-3142

1 Independent claims 1, 3, 4 and 5

1.1 Document D1, which is considered to represent the most relevant state of the art, discloses (the references in parentheses applying to this document):

An image processing method for detecting objects within an input image, the image being composed of picture elements, the method comprising:

- a) segmenting picture elements representing a foreground object within the input image from those picture elements forming the background using a first segmentation technique, wherein the picture elements segmented as foreground include elements representing a shadow or highlight of the object (page 45, section 3.1 RGB Change Detection; page 47, figure 2 (center)); and
- b) segmenting picture elements which have the characteristics of a shadow or highlight of an object from those picture elements representing the foreground object using at least one other segmentation technique adapted to detect shadows and/or highlight (page 46, section 3.2 Gradient and Chromaticity; page 47, figure 2 (right)); and
- c) detecting as objects groups of adjacent picture elements which have been segmented as foreground (page 46, line 44 "a connected-component-labeling algorithm is then applied").

1.2 From this, the subject-matter of independent claim 1 differs in that, following step b), the proposed method additionally

- l) segments as foreground surrounding picture elements to those picture elements which are already segmented as foreground; and

- ii) repeats step I) until picture elements which were not segmented as foreground after step a) would be or are segmented as foreground.

The subject-matter of claim 1 is therefore novel (Article 33(2) PCT).

- 1.3 Segmentation step b) may introduce artefacts such as holes and bisections to the detected object. In the case of bisections, two or more separate objects would be detected although the segmented regions belong to only one object. The problem to be solved by the present invention may be regarded as how to connect regions of an object which are disconnected as a result of segmentation step b).

- 1.4 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

The morphological dilation operation is well known in the art for its ability to fill small holes or cracks in regions of digital images. However, the number of dilations necessary or the size of the structural element used for carrying out the dilation depends on the application and is subject to change depending on the processed data. The proposed method repeatedly applies the dilation operator until the dilated region touches a boundary defined by a prior segmentation step. The number of dilation operations thus depends on the processed image. This solution is not known from, nor rendered obvious by, the prior art at hand and is therefore considered to involve an inventive step.

- 1.5 Independent claims 3, 4 and 5 refer to a corresponding computer program, computer readable storage medium, and image processing system, respectively. The above argumentation concerning claim 1 therefore also applies to claims 3, 4 and 5.

3 Dependent claims 2 and 6

- 2.3 Claims 2 and 6 are dependent on claims 1 and 5, respectively, and as such also meet the requirements of the PCT with respect to novelty and inventive step.